# THE MARINE RECORD.

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## LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and im rove the character of the service rendered to the public.

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## NEWLY ENROLLED TONNAGE.

Following is a list of lake vessels to which official numbers and signal letters have been assigned by the Commissioner of Navigation, for the week ended Aug. 3.

| Official No. | Rig. | Name. | TONNAGE. Gross. | Net. | Home Port. | Where Built. |
|---|---|---|---|---|---|---|
| 86.324 | St. y.s | Gipsy | 17.53 | 14.70 | Chicago | Chicago |
| 141.394 | St. s. | Lady Ann | 21.09 | 14 34 | Grand Haven | Charlevoix |
| 116,688 | " | Shenango No1 | 1.941.90 | 1 320.50 | Toledo | Toledo |
| 34.242 | Bge | C.S.B.Co No1 | 133 19 | 125.54 | Cleveland | Cleveland |
| 34.243 | " | " No 2 | 133.19 | 125 54 | " | " |
| 34.244 | " | " No 3 | 133.19 | 125.54 | " | " |
| 34.245 | " | " No 4 | 133.19 | 125 54 | " | " |
| 34.246 | " | " No 5 | 133.19 | 125.54 | " | " |
| 67,313 | " | No. 1 W. & M | 1.544 78 | 1 463.13 | Chicago | W. Bay City |

THE three books of "Sailing Directions," published by the Hydrographic Office, covering Lake Superior and St. Mary's River, Lake Michigan and the Straits of Mackinac and Lake Huron and Lake St. Clair with Detroit and St. Clair Rivers, can be had at the office of THE MARINE RECORD, 144 Superior street, Cleveland. Price, $1.00 each.

## COLONEL ABBOTT RETIRED.

By virtue of having reached his 64th birthday, Col. Henry L. Abbott, Corps of Engineers, U. S. A., retires according to law. Col. Abbott was a division engineer, and had charge of the northeast division, which includes all river and harbor work, fortifications, and light-house building in New England and New York. He was a member of the board of engineers, board of fortifications, and also upon the especial board of engineers to consider and report upon the harbor lines for New York. These positions will probably not all be again filled by the same man, for Col. Abbott's attainments as an engineer rendered him particularly available for these important positions.

Col. Abbott was the last member of the engineer corps to be brevetted a brigadier-general. He has a splendid war record, and since the war has been connected with the most important engineering works of the army.

As a result of Col. Abbott's retirement, Lieutenant Colonel Peter C. Haines will be promoted to be colonel. He is now engineer of the southeast division. Major William Ludlow, well-known on the lakes, where he was for a number of years a light-house engineer, is promoted to a lieutenant colonelcy. He is military attache at the court of St. James, and has recently returned from Nicaragua, where he went as a member of the government commission to survey and report upon the route of the proposed canal.

## A VALUABLE CHART.

The latest publication of the Hydrographic Office is a chart of Lakes Erie and Ontario, with the southern part of Lake Huron and Georgian Bay, all of Saginaw Bay and Lake St. Clair, and the St. Clair and Detroit Rivers and Welland Canal. The chart, while of very convenient size, is also a very complete map of the country surrounding the lakes. The soundings and heights are uniformly printed, in fact all figures being from the very latest data.

The chart is about the size of the old navigation charts, none of which showed more than one lake, and often only a section of the larger lakes. The reduction in scale, however, seems no bar to accuracy. The lights are marked in colors, and light and fog signals are described by abbreviations and signs fully explained on the border of the chart. This chart, as well as all the others of the Hydrographic Office issue, are on sale at THE MARINE RECORD office, No. 144 Superior street, at 75 cents each for the lake charts, the price fixed by the government. Charts of Cleveland and Erie harbors will soon be issued by the Hydrographic Office.

## MOTOR FOR SMALL BOATS.

C. D. Wright, of Englewood, Chicago, has an electric motor for the propulsion of small boats. It is portable and easily attached to the boat, and consists of a bent nickel-plated tube about six feet long, to one end of which is attached a propeller wheel of two blades, each blade being about six inches long by two inches wide. The tube is attached to a plate after the latter has been screwed into the gunwale of the boat at the stern. An electric motor is then attached to the upper end of the tube and connected with a storage battery. A wooden handle projecting from the upper end of the bent tube is used to steer with, the machine being propeller and rudder in one. Mr. Wright says the cost of charging a battery with power sufficient to propel an ordinary row-boat is 50 cents. All that is necessary to charge his battery is sulphuric acid and water, which may be taken along in a jug. The rig, as will be seen, is easily attachable to any boat.

## A BROKER'S MISTAKE.

A Chicago commission broker sent out a statement to lake ports last week, which gained very general circulation, to the effect that insurance would no longer be written on vessels rated A2½, and that they were practically shut out of the trade; that it was difficult to cover vessels rated A2, and that after September they would have to engage in something else than the grain trade.

Inquiry among the more prominent insurance men elicits the statement that the Chicago commission broker is evidently not posted, and that any alarm which his letters may have caused some owners of low grade tonnage, is groundless. Underwriters state that Toledo and Detroit shippers of grain will load A2 and A2½ vessels just the same this year as last, and will continue to do so right along to the close of navigation, and they will have no difficulty in placing the insurance on the cargoes, as they have perfect facilities with the largest lake companies. Chicago shippers fully understand that they can insure any cargo they may load for its full value under the most liberal form of policy, at rates no higher than have been paid for years. "If the Chicago commission broker is not fully aware," says a well-known underwriter, "that no difficulty need present itself at any time to fully protect any cargo, irrespective of class, he is single in his position."

## COMMERCIAL QUESTION COMES IN.

The Carnegie Steel Co., of Pittsburg, is not enthusiastic over the alleged discovery by three steel workers of the lost art of welding copper to iron or steel. George Cromley, Cornelius Shay and John Ryan have submitted samples of their work to the Carnegie Co., but they have not proven that the welding can be done upon a commercial basis so as to make it profitable. Chairman Leishman, of the Carnegie Co., stated Monday that the company had not taken up the matter and that no experiments would be made at their mills. As a matter of fact, copper-lined plate would only be of use on salt water, and then it would be available only if manufactured at a price that would warrant shipbuilders in using it upon merchant ships. As for covering armor plates with copper, Mr. Leishman stated that such a thing would never be done. It would only be of use in preventing corrosion and there is so little of the armor plate below the waterline that the copper would be unnecessary. Mr. Leishman also denied that the company had offered the men a fixed price for their discovery.

# NEWS AROUND THE LAKES.

## CLEVELAND.

The pile-driving on the extension to the north basin of the Ship Owners' dry-dock will be finished to-day, the 15th, and the work of timbering will begin at once. It is hoped to have this entirely completed by September 1.

The work of building a sounding board on the land-ard side of the fog signal, to keep the sound off the city and to give it greater intensity lakeward, is almost finished.

The Canadian schooner Dauntless, which was tied up by the Collector of Customs on complaint of the revenue steamer Fessenden, on charge of refusing to show her papers, got off with a $10 fine on the representation of her master that there was no intention of violating the law. This schooner was seized last year at Port Huron, and was sold by the U. S. Marshal for $125, according to the Port Huron Herald.

The Yale Transit Co. has been incorporated under the laws of Ohio, with a capital stock of $210,000, with headquarters at Willoughby, and with R. R. Rhodes. W. C. Rhodes, Robert Wallace, John H. Bartow and Frank S. Masten as incorporators.

River thugs are getting in their work again. Two of them desperately assaulted Engineer Botes, of the steamer Rube Richards, with intent to rob him, Tuesday afternoon, on Whisky Island. Both were afterwards arrested.

The steamer Lewiston, drawing 15 feet 7 inches, got ground on the east side of the river, north of Lake Shorebridge, Monday night. Col. Smith expects to have a government dredge at work here soon.

A large structure is attracting considerable attention just below Willow street bridge. It is the crib of the new light-house at Sandusky, and is 50 feet square. It is being built by L. P. & J. A. Smith, who expect to have it completed in time to tow it to Sandusky in two weeks.

The vessel interests cannot push too rapidly their efforts to secure the widening of the Old River Bed between Willow street bridge and the main river. The new 432-foot boat on which the Globe Iron Works Co. is about to begin work would not be able to get out of the river bed when completed were the contemplated improvements not carried into effect. The center pier on the Willow street bridge should be taken out entirely, and not placed at one side of the present cut, as has been proposed. Such a change as that would only be a makeshift of which any city administration might well be ashamed, and would answer for only a couple of years at best. The Valley bridge, with its huge piling obstructions, is, of course, almost certain to be superseded by a structure which will not interfere so outrageously with navigation, now that the litigation over the possession of the road is over.

The steamer Riverside is building up a good trade between Cleveland and Lorain. She makes two trips each day, leaving Cleveland at 10 a. m. and 6 p. m.

## CHICAGO.

*Special Correspondence to The Marine Record.*

Carr & Blair chartered this week the John F. Eddy for corn to Buffalo at 1¼c.; the Progress for wheat to Buffalo at 1½c.; the A. G. Lindsay, wheat to Buffalo at 1⅝c.; the Frank L. Vance, corn, South Chicago to Buffalo at 1½c. J. G. Keith & Co. chartered the P. J. Ralph for wheat to Buffalo at 1⅝c.; barge Harold, corn to Buffalo at 1⅝c.; the Neosho, corn to Buffalo at 1½c. Palmer, Cook & Calbick chartered the White & Friant and consort Lizzie A. Law for wheat to Toledo at 1½c.; the Fred Pabst for corn to Buffalo at 1½c.; schooner Sunrise, corn, to Point Edward at 1¼c. P. H. Fleming & Co. chartered the Ionia, H. S. Pickands and Marengo for wheat to Detroit at 1½c.

Capt. Thomas Hansen of the schooner W. O. Goodman, was drowned last week at Manistee and his body was found on Monday. The deceased had been master of the schooner Goodman ten years and had been in the employ of Capt. William Johnson, her owner, 18 years. He also sailed Capt. Johnson's schooners Olga, Ida, Alice and Clara. He had been sailing out of Chicago about 30 years and was much respected. His remains will be brought to Chicago for burial. Many flags were at half mast on vessels in Chicago River Monday and Tuesday out of respect to the deceased. The Goodman arrived here from Manistee Tuesday morning in charge of the mate.

Mosher T. Greene, President of the Chicago Lumber Co., was accidentally drowned last Friday, by the capsizing of a row boat in the lake, off Highland Park. S. Lorenson, a coachman, who was in the boat, was also drowned. Mr. Greene could swim, but Lorenson could not, and Mr. Greene, in trying to save him, lost his own life.

The schooner William Aldrich was dismasted by collision with the Metropolitan Elevated railway bridge over Chicago River, near Jackson street, Monday morning at 9 o'clock. The schooner was in tow of the tug J. R. McGordon, bound up the South Branch with a cargo of hardwood lumber. The tug and schooner passed safely through the draw of Jackson street bridge, but the railway bridge failed to open in response to the tug's signals, and before the schooner could be stopped she crashed into the bridge and carried away her jib-boom and three masts. Very fortunately none of the crew were injured by the falling spars and gear.

## BUFFALO.

*Special Correspondence to The Marine Record.*

The new Lake Shore elevator began business Monday.

The North West broke all previous records for speed on the last trip down from Duluth. Her time was 52 hours and 5 minutes. When she arrived at Detroit to take on fuel she was over two hours ahead of schedule time, but she stopped to take on fuel.

About fifty canal men met on West Seneca street last Friday to protest and pass resolutions against what is termed the conspiracy of the railroad and elevator people to crush out the canals of the state. The resolutions demand practically the reversion to the people of the charters of the New York Central, the Rome, Watertown & Ogdensburg, the Erie, Lackawanna, Delaware & Hudson, and other railroads. The preamble recites that while the canals have been carrying grain 500 miles for the unprecedentedly low rates of 1⅛ to 2¼c. per bushel, the elevators have been extorting, for the mere work of transferring grain from lake vessels to canal boats, and from the boats to ocean steamships, 2⅛c, per bushel, over and above what is paid to shovelers for feeding the elevator legs and trimming cargo. The resolutions are to be printed in circular form and distributed throughout the state.

## ASHTABULA HARBOR.

*Special Correspondence to The Marine Record.*

Shenango car ferry No. 1 is expected to be delivered at Conneaut Thursday. She is billed to carry an excursion on the 22d, and will soon enter upon her regular trade.

Several young men are negotiating with Capt. John P. Devney for the purchase of the yacht Unique. They expect, if they buy her, to fit her out with regulation yachting sails. The Unique formerly belonged to the Cleveland Yacht Club, and won the pennant for three consecutive seasons.

The expense of repairing the four big hoists which were blown down by Sunday evening's storm is reckoned at more than $5,000.

Jacob Strader's yacht, the Alice B, is still on the stocks at the Laird shipyard. He contemplates adding ten feet to her length, which would make her abont forty feet long, and would contribute greatly to her looks and speed.

## DETROIT.

*Special Correspondence to The Marine Record.*

Capt. Hilger, of the mail boat Florence B. has been criticised somewhat because he crossed the tow line of the barge 102 last Wednesday. The line tightened up just as the Florence was crossing, and she bent her rudder and shoe. She was repaired at once and missed very little time. Capt. Hilger explains that he did not run the risk carelessly, but found himself in a pocket, and this was his only chance of getting clear.

The tug Dave and Mose was sold by the U.S. Marshal last Thursday afternoon. The Davis Fish Co. bid her in for $400.

Diver Quinn recovered the body of the wrecked Britannica's fireman Saturday. His name was Charles Lindner, and he shipped two weeks ago at Fairport. He had been caught by wreckage in the stairway and held fast.

Capt. E. M. Peck has just returned from Cleveland, where he has been letting the contract for a new steel schooner, to tow behind the S. R. Kirby next season. He says this is not a sign of prosperity, but a sign that those who put their money into what was paying tonnage a few years ago, have to take this way of adding to their steamers' capacity to make them pay, with the present low freights and low water. She will be built on the general model of the Minnesota schooners and the new Corrigan barge Aurania, and will carry the small stack aft, which makes the Malta and Marcia look like weak-lunged steambarges.

## SAULT STE. MARIE.

*Special Correspondence to The Marine Record.*

Officials in charge of the work at the Canadian canal deny all knowledge of the rumored opening on Thursday, and it is probable that they would be informed if it were to take place on that date. The opening will certainly not be far distant, however, as the channel is being buoyed above and below, and two dredges are at work above and below the lock.

Proposals for furnishing labor, materials and appliances for removing shoals from the east and west approaches of St. Mary's Falls canal, and shoals from Six-Mile Point, Hay Lake and Shoal 29, section 4, ship channel, will be received at Gen. Poe's office, Detroit, until September 6.

C. Culhane, who is conducting extensive lumbering operations in Luce County, near the Two Heart River, has 40,000,000 feet of standing pine yet to work into lumber. He has a standard-gauge logging railway 11 miles in length which is thoroughly equipped. It runs south from the river. Mr. Culhane has just closed a contract with Chesbrough Bros. to haul about 10,000,000 feet of logs to the river this fall. The Soo Mill Lumber Co. and C. E. Ainsworth are engaged in sawing his logs here.

## SANDUSKY.

*Special Correspondence to The Marine Record.*

One of the straight channel dredges has been employed at the mouth of the bay this week.

Mr. Harry Molyneaux received from New York, last Monday morning, a handsome naptha launch, about 25 feet long, and it was placed in the water at the Big Four docks. It has been named the Hattie C., and was at once put into commission.

The Bennett Bros. Lumber Co. has leased from the Big Four Railroad Co., the property once occupied by the Ayers Lumber Co., and later by Hawes & Williams. Work was begun last Monday at rebuilding the old Ayers dock, and dredges will at once deepen the water around this dock, and connect it with the main channel.

## LORAIN.

*Special Correspondence to The Marine Record.*

People turned out by the hundreds to see the steam canal-boat Alpha and her five consorts leave for New York Sunday morning under the escort of the tug Joe Harris, and carrying about 1,600 tons of steel rails for New York. The Lorain people watch the line with a great deal of interest, for a direct connection with New York, without breaking bulk of freight, means a great deal to all the lower lake ports. After the barges got outside it was found their rudder surface was insufficient and they set out for Cleveland to have this remedied. Their greatest need of rudder surface is in the canal, where they must steer quickly to handle with success.

The crib of the 64-foot extension to the west pier has just been placed, and is now being filled with stone, brought here by the Dan Kunz and A. Y. Gowen.

The steamer American Eagle has been chartered by the employes of the Johnson steel works for an excursion to Put-in-Bay next Sunday.

If the government announces in advance when the wrecked barge Republic will be blown up, excursions will be run to see the explosion.

The dredge Continental is doing some very lively work at this port.

The schooner Red, White and Blue is being fitted out and will probably clear in a few days.

## FLOTSAM AND JETSAM.

There were only 13 cargoes of coal passing through the Welland in 30 days.

Capt. McDougall estimates the loss to the Lake Superior fleet by low water at $10,000 per day.

The schooner Jessie Phillips has been tied up at Milwaukee on a claim for seamen's wages, amounting to $140.

Sailors' wages on Lake Michigan are still $1.50 per day, but the men are paid off as soon as the vessel reaches port.

Capt. John Rooney's dredge will to-day finish removing the humps in Toledo harbor, near the Ohio Central docks, about which so much fuss has been made for a week past.

John Maher, of Bay City, and James McGregor, of Saginaw, both received patents on water tube boilers this week. The latter had J. L. Jackson associated with him.

Last Saturday was the 54th anniversary of the burning of the steamer Erie off Silver Creek, N. Y., with a loss of 250 lives. The Erie was at one time the finest boat on the lake.

The docks of the Skillings, Whitney & Barnes Lumber Co. were burned at Ogdensburg, last Friday morning. The fire, besides heavy damage to the dock, destroyed 10,000,000 feet of lumber.

The F. & P. M. steamers have had a shaking up. The No. 5 has been placed in ordinary, and her master, Capt. John Gee, has been placed in command of the No. 1, Capt. Nolan taking No. 2, Capt. Joseph Russell No. 3, and Capt. John J. Doyle No. 4.

Again there is loud complaint about low water in the Welland Canal. The McVittie had to lighter 5,300 bushels of grain before she could get through. The natural gas pipes on the bottom suffer a good deal of damage by vessels dragging on them.

The idea of breaking ice and driving it out of the way by means of a propeller wheel on the bow is said to have originated with Capt. J. W. Millen, who discovered its efficacy when a tug man, and often passed through ice blockades by driving his tug stern first.

The Secretary of the Treasury Department has appointed Eugene V. Kimball first assistant, and Patrick J. McCoulie second assistant keeper of the light station at Seul Choix Pointe; and Charles Schultz first assistant keeper at White Fish Point, vice Alonzo L. Kimball, resigned.

All charts of all portions of the lakes supplied promptly by THE MARINE RECORD, No. 144 Superior St.

## NOTICE TO MARINERS.

LOW WATER AT THE ENCAMPMENT.

Capt. Joseph Roleau, the well-known St. Mary's River pilot, says that the water at the Encampment is four inches lower this year than last. Captains should look out for a spot at the Encampment just above the red buoy near Ross' dock to the turning point opposite the crib. Many boats have struck it and it has caused much trouble during the past ten days.

CORSICA AND NORTHWEST SHOALS.

An examination of the Corsica and Northwest shoals at the foot of Lake Huron shows that they are dangerous to all vessels at this stage of water, as there is but 15½ to 16 feet of water over them. Gen. Poe gives the general direction for masters to avoid these shoals that they pass to the west of the lightship at all times, and between the two dredges, which stay in their positions over night when the sea is not too heavy.

NEW MARKS ON DETROIT RIVER.

Upon instructions from Capt. George P. McKay, Capt. Hackett has just placed two spar buoys, one red and one black, on either side of the channel at Ballard's reef. A floating light has been placed on New York shoal, bearing a red lantern, and a float has also been placed on Boston shoal, with a red light under a white light. These marks are placed there on account of the extremely low water.

SEUL CHOIX POINTE LIGHT-STATION.

By order of the Light-House Board, notice is given that, on or about August 15, 1895, the temporary fourth-order light, exhibited from a frame-work tower, will be discontinued, and there will be established a third-order fixed white light in the conical brick tower recently erected at this station, on the easterly extremity of the point. The focal plane of the third-order light will be 79 feet above the mean level of Lake Michigan, and the light may be seen 16¾ statute miles in clear weather, the observer's eye 15 feet above the lake. The light will illuminate an arc of 324°, and will be visible to vessels from all points of approach.

CHANNEL AT STRAWBERRY ISLAND.

Maj. E. H. Ruffner, at Buffalo, states that two accidents have recently occurred near Strawberry Island from vessels striking the ridges necessarily caused by the dredges in deepening the channel at that point. As three cuts have been completed to full depth there is now a safe channel about 55 feet wide to the westward of the three black buoys, but vessels should be very careful to keep as close to the line of the buoys as possible. If pilots fear that they cannot hold their vessels in a channel so narrow as 55 feet, in the current found there, they should then hold their craft at least 100 feet or more, to the west of the buoys, so as to safely clear the dredging buoys. These are light spar buoys placed by the contractors, and should be given a safe clearance.

AT THE FOOT OF LAKE HURON.

Capt. C. Z. Montague, of the Arthur Orr, says his steamer did not strike Corsica Shoal, at the foot of Lake Huron, as reported. He says she evidently struck a small, sharp-edged obstruction on the turning point, leaving the Fort Gratiot ranges, bound up, and about 1,000 feet S. by W. from the light-ship and about 3,000 feet S. on the Fort Gratiot ranges. "Few of the masters," says Capt. Montague, "have as yet received sailing directions for the deep channel, and consequently they run too far on the Fort Gratiot ranges before directing their course out by the light-ship. The Orr was drawing 16 feet 2 inches, and was under check to half speed when she struck, consequently the damage was slight. Capt. D. C. Sullivan, of the Pabst, informs me that his steamer struck heavily a few days later on the same obstruction. I would caution masters when loaded deep in this vicinity."

NOTES FOR NAVIGATORS.

The sand bar in the river opposite the F. & P. M. dock at Manistee keeps rising, and is giving vesselmen a good deal of trouble.

Leo Bernard has placed his red light on Vital Shoals on a larger float, and erected it to a height of 12 feet. A box four feet square has been placed on the scow and painted red. In hazy weather the government red stake is difficult to locate and Mr. Bernard's float will greatly aid navigators. It is one of the most important marks on the St. Mary's River.

The shoals have all been removed from the Portage Lake ship canals and there is now 15 feet of water through them. Dredges are at work widening and deepening the channel in Portage River.

The Canadian steamer Bayfield, engaged in surveying Lake Ontario, reports the discovery of a seven-foot shoal straight out into the lake about five miles off Peacock Point, a short distance above Port Dover.

Messrs. A. & D. Saug, of Duluth, have completed their contracts for rebuilding the piers at the entrance to Portage Lake ship canal. The piling on Lily Lake is practically finished and the dredging completed, so that all boats able to pass through the locks at the Soo can easily get into Portage Lake.

## PERSONAL.

Captain W. E. Mallory is out again after an illness of one week.

Capt. George H. Daniels, of Oswego, has been appointed master of the George W. Adams.

The master of the rafting tug Torrent is Capt. Alex. Cattaneck, with Capt. J. M. McGregor as mate.

Secretary Ritchie, of the Cleveland Chamber of Commerce, is enjoying a lake cruise on the steamer Globe.

J. Peters, formerly first mate on the steamer Alaska, has been made master of the Gordon Campbell, vice Capt. Duerker, resigned.

Capt. Thomas Wilson, of Cleveland, president of the Wilson Transit Co., will spend the remainder of the month hunting and fishing in the Lake Superior region.

Supt. John Parker, of the upper yard of the Detroit Dry-Dock Co., and one of the best-known wooden shipbuilders on the lakes, is very ill with a complication of diseases.

Second-Lieut. J. B. Cavanaugh, Corps of Engineers, from Willett's Point, New York, has been ordered by the Secretary of War to report for duty at Detroit, under Gen. O. M. Poe.

Charles J. Sheffield, who was interested with Harvey H. Brown in vessel property, died in Cleveland last week. The steamer sunk by the North Star off Whitefish Point some years ago was named after him.

Chief Engineer A. Williams, of the steamer C. Tower, Jr., says he is not the engineer who was stabbed in a fight in an Erie disorderly house. He was not away from the steamer on the night in question.

It is reported that Capt. L. R. Boynton, manager of the car ferries Ste. Marie and Ste. Ignace, at the Straits has received an offer proposing that he shall go to Siberia to superintend hull construction on the new ferry barges to be built on Lake Baikal.

Charles T. Harvey, of New York, was at the Sault for a short time last Friday. He was superintendent of construction on the old state lock, and was the man to turn the first shovelful of earth on June 4, 1853. He was much interested in the great commerce which now passes through the canal, as well as in the construction of the new lock.

## INVESTIGATION BEGUN.

General O. M. Poe, of Detroit, Major Ruffner, of Buffalo, and Major Marshall, of Chicago, who constitute the board of army engineers appointed by the Secretary of War to consider whether the Chicago drainage canal will seriously effect lake levels, has begun its investigation at Chicago.

They will make a thorough inspection of the capacity of the canal and the amount of water it will carry from Lake Michigan. The next investigation will be the outflow at Port Huron and Niagara. It will be several weeks before the findings of the board are submitted to the war department.

THE Dubuque Times says, with respect to the new revenue cutter Wm. Windom, built there for the Government, that "the two barges which were intended to be used in taking the Windom down the river have been fitted up at the Eagle Point ways and are now in readiness to go down on their mission, but from present indications it is very doubtful whether the Windom will get out of her present quarters in the ice harbor for several months, and perhaps not until next spring. As the stage of water in the river is scarcely 3 feet above low water mark at present, it would be a very difficult task to undertake to tow the Windom down between two barges as there would be more or less risk of running aground, which might cause considerable trouble and delay, and, besides, it would be a heavy expense."

## AN ATLANTIC GREYHOUND.

The daily cost of running a large transatlantic steamship like the American liner St. Louis is something like $5,500. No single individual of the St. Louis gets a large salary. The captain heads the list, getting about $5,000 a year. Captains on smaller passenger steamers only receive $3,000 a year. The chief officer of a ship like the St. Louis gets $1,500. The second officer's pay ranges from $900 to $1,200, according to the size of the ship, while the third and fourth officers only get from $600 to $900.

The crew of the St. Louis number 410 men. Two hundred of these are in the engineer's department, and all of them are directly under the authority of the chief. The steward's department is the next largest, numbering 170 in all. The sailors, including the deck officers, number but 40.

The engineer's department is the most expensive on the ship, owing to the immense coal bills. The St. Louis burns more than 300 tons a day, or about 4,500 tons the round trip. This means an expenditure of $15,000 alone. The salaries of the men, the engineering supplies, including the thousand and one things needed for the vast machinery of a great ship, will require an expenditure of $5,000 every trip.

The chief engineer draws $3,000 a year, and his immediate assistants receive $1,500, $1,200 and $1,000 respectfully. The stokers or firemen average about $30 a month, and the furnaces of the St. Louis require 180 of them working in different shifts.

The purser, who is a most important person on board, does not get much in the way of salary, as the company in fixing his pay figured on the large bonuses he receives for changing money and performing the little services which the wealthy traveler does not hesitate to pay for liberally. His salary is only $1,000 a year, but he makes another $2,000 in fees and sometimes considerably more.

The ship's surgeon only receives $900 a year for the same reason. He is brought in contact with numerous real and fancied invalids of the wealthy class, and a big, popular ship like the St. Louis is worth to him at least $3,000 to $4,000 a year.

The steward's department is one of the costliest on the ship. The provisions for a round trip cost in the neighborhood of $12,000, and the salaries of the steward's men amount to $3,000 more. The stewards are the least paid of any on the ship, for the reason that in the fees of the passengers they collect a considerable sum annually. All the pay they get is $20 a month, but they take in $40 a month in tips. The seasick man and woman are always willing to give their last cent for some little service.

The chief steward receives $1,500 a year and also comes in for his share of the tips, as it is within his power to place many delicacies in the way of the liberal tourist

The chief cook is a great man on the ship, almost as great as the captain, and in all makes $3,000 a year out of his job.

The breakage and wear and tear on the ship and its furniture are very heavy, requiring an expenditure in incidentals of about $5,000 each round trip. There are countless things to be replaced and a comparatively little thing like the washing of the ship's linen means an expenditure big enough to support a man for a year in the lap of luxury.

Here are some odd facts about the St. Louis: There are fully 1,000 tons of piping of various kinds in the ship. The condensers will pump up at least 50,000,000 gallons of cool water a day. The furnaces will consume no less than 7,500,000 cubic feet of air an hour. The boiler tubes, if placed in a straight line, would stretch nearly ten miles and the condenser tubes more than twenty-five miles. The total number of separate pieces of steel in the main structure of the ship is not less than 40,000, and the total number of cubic feet of timber used in the construction is more than 100,000. The total number of rivets is not far from 1,250,000.

The expense, for the round trip of the St. Louis amount to between $60,000 and $80,000.

## ANOTHER COAL-LOADING MACHINE.

The new McMyler coal loading machine which has been erected at Fairport, will be ready for use in a few days. It is a precise duplicate of the Ashtabula machine, save that some of the parts are heavier.

### SOMETHING ABOUT THE HERRESHOFFS.

The shipbuilding genius of the Herreshoffs descends from the maternal line. The brothers are grandsons of Charles Frederick Herreshoff, who removed from Germany to Rhode Island in 1790, and married a daughter of John Brown, a large shipowner and commander of the fleet which burned the British ship Gaspee in 1773. His son, also Charles Frederick, was born in 1819, and died in 1888, leaving seven sons. James Brown, who was educated at Brown University, became a mechanical engineer, and invented in 1877, the coil boiler for steam vessels. The two brothers most prominent in the present shipbuilding company are John Brown, who was born in 1841, and who became blind when only 15 years old, and who is president of the company, and Nathaniel Greene, seven years younger, who is designer and general manager. Nat was educated at the Boston Institute for Technology, and was employed for seven years at the famous Corliss Engine Works. He brought out the famous catamarans in 1877.

The president, however, remains the real head of the company. He does all of the headwork and preliminary planning. Being stoneblind he must carry every figure and calculation in his head. He has probably the most retentive memory of any man in the world, and, as he is not annoyed by seeing anything of an interrupting character, his powers of concentration are wonderful.

Friends say that when John was a small boy, as soon as he was trusted with a pocket knife, he whittled out miniature boats of all styles. At the age of 15, just before he became blind, he built a good-sized cat-boat for sailing on Bristol Bay, and its lines were so finely drawn that she won all the scrub races of the day. This boat gave the youth a local fame that is now only bounded by the confines of the earth.

All that John Herreshoff had seen prior to his blindness he can now summon up before him, and his memory in this respect, down to the most minute detail, is most remarkable. From a description he can set up an intricate piece of machinery, and explain its workings and defects. He attends to the making of contracts for steam craft. A striking instance of his extraordinary calculating power was shown a few years ago. While working at his office in Bristol, he received a telegram from the New York consul of a South American government, asking him to go at once to New York to meet representatives of a South American government. Herreshoff reached the consul's office at the appointed time, and was informed that three torpedo boats of a novel design were wanted. These boats were to be built in sections, so that they could easily be shipped on the deck of a steamer to their destination. Several other conditions were attached, and then Mr. Herreshoff was asked what he would build them for?

"I must have time to think it over," he said. "How much time?" "Twenty minutes." Then this man simply sat still and thought. He carefully considered the plans and specifications of the boats, the cost of material, the time it would take his men to build, the mechanical possibilities of building them in sections as required. These and a dozen other features of the proposition were gone over. As soon as one part was duly considered he made a mental note of the result, and took up the next, finally totaling the various items. At the expiration of twenty minutes he had his answer ready, and the contract was closed. The boats were constructed and shipped as ordered.

Mr. Herreshoff is at the shops every morning at 9 o'clock when he is at home. He moves about the office without assistance. The pigeon holes of his desk are filled with papers and documents of all kinds, and although he has never seen one of them, he can pick out any particular paper he may want simply through memory and his sense of touch, which has been developed to a truly wonderful degree. A secretary reads all the morning's mail to him, and when each letter has been gone over Mr. Herreshoff dictates the reply. He is kept minutely informed of all the doings in the yard, and in this way he keeps a perfect picture in his mind of the workings of the whole establishment.

Mr. Herreshoff sometimes sits for half a day at his desk, with his head resting on his hands, thinking. Great problems in mathematics he can work out in this way, and wonderful devices in mechanics are evolved without the aid of secretary, pen or paper.

All the models of vessels to be built are submitted to him. If the work is of extreme importance, such as the building of a cup defender, the president sometimes sits for days, rubbing his hands lightly over the model, thus getting a perfect picture of the lines of the boat. Many changes suggest themselves to him, and he works them out with mathematical precision to show their correctness.

### ASHTABULA'S NEW STATION KEEPER.

(ILLUSTRATED.)

Capt. F. E. Walworth, keeper of the new life-saving station at Ashtabula Harbor, while he has not been long in his present rank, has yet seen considerable service in this line, both after he enlisted, and before he made a profession of the work. He was born at Selkirk, on the dreaded Mexico Bay, October 5, 1848. He took to the water early, and his first rescue was that of a young comrade, who was in bathing. The heavy undertow was carrying him rapidly away from the shore, when young Walworth swam off through the breakers and returned with his playmate, who had a very narrow escape from drowning.

Capt. Walworth's early years, after he attained the age of self-support, were spent in sailing and fishing.

CAPT. F. E. WALWORTH.

He entered the life-saving service in 1883, under Capt. Blackburn, and served until the autumn of 1884. He sailed for some time, again, and then re-entered the service in 1889 at Oswego, under Capt. E. E. Chapman, and remained in that station until Captain, now Supt. Chapman, of Lake Erie district, recommended and secured his appointment as keeper of the new Ashtabula station, established last season.

### NEW PATENTS.

Jacob Peterson, of Two Harbors, has received letters patent, No. 543,314, on a new oar lock, by the use of which the rower may sit facing either bow or stern at pleasure. Other patents granted lately were No. 543,179, Means for Ventilating Vessels, to Benjamin A. Davis, New York; No. 543,210, Design for Vessel, to prevent excessive heeling, to Nathan C. Jessup, Westhampton, N. Y.; No. 542,129, Anchor, to Herbert O. Dunn, Baltimore; No. 542,992, Submerged Paddle-Wheel, to Daniel S. Dark, New York; No. 543,730, Light-Signal, to David P. Heap, United States Army; No. 543,637, Dredger, to Lindon W. Bates, Chicago; No. 543,650, Bow-Facing Oar, to Thomas J. Murphy, Cincinnati; No. 543,756, Diving Apparatus, to Hubert Schon, Allegheny, Pa.; No. 543,860, Propeller, to Julius W. Flowers and Minor J. Fox, Newport, Ore.; No. 543,909, Screw Propeller, to Walter Thompson, Chicago, assignor to H. Duane Hurlbut, Paterson, N. J.; No. 544,100, Lobster Trap, to George Hurst, Canso, Can.

Full description of any of these can be obtained at the Patent Office, Washington.

### THE CLEVELAND AND BUFFALO BOAT.

General Manager Newman, of the Cleveland & Buffalo Transit Co., has received blue-prints of the cabin plans of the new steamer which is being built for the line by the Detroit Dry-dock Co. The material has been delayed very badly at the mills, but the Otis Steel Co., which is furnishing the angles, has begun to turn out the plates this week, and will continue until it is all furnished.

The staterooms on the main cabin deck are numbered to 71, with four parlors and two bath rooms in addition. On the gallery deck the staterooms number from 100 to 158, and have in addition two parlors, each to be furnished with a bath. These two parlors are at the extreme forward end of the saloon, and just aft of the officers' quarters, each has a large window looking out ahead over the quarter of the vessel, and they are absolutely the best that are to be afforded on any boat, being about 14 x 16 feet in size. The staterooms are arranged, wherever at all practicable, with connecting doors, which are of the sliding type, in order that parties of all sizes may be accommodated as they like. The dining room is entered from the social hall substantially as described last week, and will seat 125 persons, extra space with private dining rooms being provided aft of the offices on the main deck. In the forward part of the ship, below the main deck, are the crew's quarters on one side, and on the other a large and well furnished apartment will be arranged, separated by a steel fore and-aft bulkhead from the crew's quarters, and well ventilated by forced draft, and containing 125 berths, to be sold at low rates to men, sufficient space in the staterooms always being reserved for ladies.

### LAKE ERIE'S SEA SERPENT.

Lorain is steadily forging to the front as a lake port and summer resort. Her latest accomplishment has been to unearth a sea serpent, or the skeleton of an unknown monster which is claimed to be something of the sort, according to the Lorain Times. The remains were unearthed by a gang of workmen engaged in excavating for the intake water pipe, and were found fully eight feet beneath the surface of the beach, where they had lain for many years. The bones recovered consisted of seven or eight vertebræ, fins, ribs, and upper jaw. The latter is about twelve inches in length, and shaped like an alligator's, although there is no evidence of any teeth having ever been in the jaw.

The vertebræ are dovetailed together, and have short protuberances and fin connections. The latter are about eight inches in length. The ribs of the monster are more than two feet long and very oval shaped. The head and spinal column fit nicely together, and show that the former was on a plane with the latter, and did not extend perpendicularly, or protrude at an angle. The frontispiece of the head is about three inches through and formed a strong protection to the brain. The skeleton was placed in the hands of Prof. M. K. Trembly, a local naturalist and geologist, who says there is no resemblance on the part of the bones to any known wild or domestic animal. He estimates the length of the monster to have been more than 20 feet.

The city of Lorain has put in a claim for the skeleton, with the idea of placing it in a museum there. Replevin proceedings were taken, when the skeleton suddenly disappeared. It will probably soon turn up again.

### TERRESTRIAL MAGNETISM.

As a result of the first triangulations of European Russia in 1854-55, very peculiar observations about the magnetic variations of the needle have been made. The deflections of the needle have been found to be nearly the double amount as normal for that latitude and longitude. In a section near Moscow covering a territory of about thirty miles from north to south and about 150 miles east to west, investigations show peculiar and abnormal facts which puzzled the engineers of that section since 1854. From H. Fritsche, who had charge of the observations, and who made extremely careful measurements and calculations, has now claimed that in the vicinity of Moskan, there must be enormous quantities of iron ore, but unfortunately about 3,500 miles below the surface of the globe, therefore rather too deep for future development of mines.

All charts of all portions of the lakes supplied promptly by THE MARINE RECORD, No. 144 Superior St.

# AIDS TO NAVIGATION.

### WHAT THE LAKE CARRIERS WANT.

The officers of the Lake Carriers' Association expect to get together at an early date to prepare a list of aids to navigation, which are considered essential to the interest of the lake trade.

Among the most important improvements which will be recommended to Congress is the matter of widening Hay Lake Channel. The cut was made 300 feet wide in order that a navigable direct channel for vessels might be opened as soon as possible, but the engineers in charge of the surveys have always pointed out in their reports, that there was space of 150 feet on each side which should be cut out in the future, as the needs of lake commerce demands a wider channel. It is now obvious that with three large locks at Sault Ste Marie, the Hay Lake cut will very soon be too narrow for the safe passage of vessels, and this is likely to be demonstrated in a manner very expensive to the insurance companies before the improvement can be completed. The cut is almost entirely through stone, and it would require some time to make the channel twice as wide as at present.

The Association will also urge upon Congress the necessity for better facilities at the foot of the St. Clair river. The St. Clair Flats Canal is only 295 feet in width, and through it must pass all the traffic to and from Lake Michigan, Lake Huron and Georgian Bay, in addition to that between Lake Superior and the lower lakes, which alone taxes a channel 300 feet in width. An improvement of the St. Clair Flats Canal has long been urged by the Lake Carriers, but has not yet met with the approval of Congress. The plan of improvement which meets with most favor is to leave the canal stand as at present, and to construct a third pier or bank 300 or 400 feet to the westward of the west bank, dredging the water in the new channel thus formed to the requisite depth. Regulations constituting one the up-bound, and the other the down-bound channel might be enacted, giving, however, to the engineer in charge of the improvement full power to suspend this rule and to allow both up and down bound vessels to use either cut should the other channel suddenly become obstructed.

The Lake Carriers presented a request to the last Congress for appropriations aggregating $123,000 to be incorporated in the sundry civil bill, nearly all of which were granted, although none of them have yet been erected. They include a light and fog signal on North Manitou Island, Lake Michigan; range lights and fog signal at Death's Door Passage, entrance to Green Bay; and north and south ranges on Grassy Island, Detroit River, besides gas buoys for Gravelly Island, in Poverty Island Passage, entrance to Green Bay, and for Lansing Shoal, north of Squaw Island, Lake Michigan, which may be provided at any time by the Light-House Board.

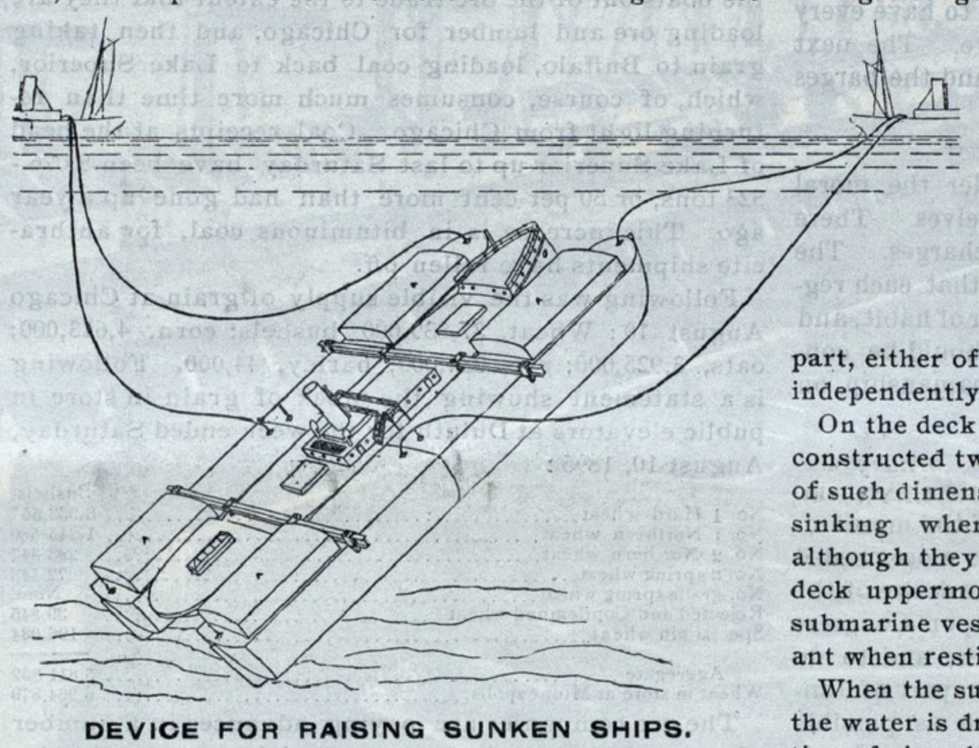
The Lake Carriers will, in their next memorial, press the claims of two other very important light and fog signal stations, for which they have asked for a number of years, but which Congress has each time seen fit to pass over. One of these is at Middle Island, one of the most dangerous localities on Lake Huron, and the other is at Crisp's Point, west of White Fish Point, Lake Superior. Life-saving stations have been established at both these places for some time, and the crews have done a great deal of important work, a convincing argument for the need of lights and fog signals to keep vessels off the rocks at these points.

The memorial addressed to Congress last year refers to Middle Island as follows: "Middle Island is a low island lying near the west coast of Lake Huron, and is an important turning point for vessels. The shelter behind this island is very much used as a natural harbor of refuge, and a light and fog signal are very necessary to aid vessels to seek this shelter, which can now only be sought in the daytime. South-bound vessels here shape their course for St. Clair River, and the courses of north-bound vessels here diverge, one course being for the Straits of Mackinaw and Lake Michigan, and the other for St. Mary's River and Lake Superior. During the ten years covered by the tables in the last report of the life-saving service, there were sixteen strandings on Middle Island and the adjacent reef." A number of these casualties are then referred to in detail.

Concerning Crisp's Point, the memorial said: "Every vessel bound down Lake Superior from the St. Mary's River and canal has to round White Fish Point. It is one of the most dangerous localities on the Great Lakes, a fact which can perhaps be most conclusively proved to your committees by the fact that the government has established not less than three life-saving stations in the immediate vicinity. Vessels bound down Lake Superior in thick weather, and trying to round White Fish Point, need to locate their positions as accurately as possible before reaching the dangerous point itself. If they get at all out of their course to the southward, the shape of the land is such that they run aground on a dangerous shore. Many vessel masters consider this the most important light on the list, and a petition signed by a large number of vessel owners and masters for this light was filed with the Light-house Board last winter. The report of the life-saving service shows thirteen strandings in the vicinity of Crisp's Point during the last ten years. It is believed that nearly all of these strandings could have been avoided if vessels bound down the lake had had a light and fog signal at Crisp's Point, 18 miles west of White Fish Point, which would have enabled them to determine their proximity to this dangerous shore before the present light and signal at White Fish Point could be seen or heard."

### A STORY OF BOIS BLANC LIGHT.

A Newfoundland dog, according to the Detroit Journal, was responsible for the location of the light-house



DEVICE FOR RAISING SUNKEN SHIPS.

on Bois Blanc Island, at the mouth of Detroit River. In 1837, Sir Francis Rond Head, then governor of Upper Canada, paid an official visit to Amherstburg. Capt. James Hackett was the owner of a valuable Newfoundland dog, which attracted the Governor's attention. When he stopped to admire the dog, Capt. Hackett's wife approached him with the suggestion that a light-house on Bois Blanc Island was a great necessity, and asked, in the event of its erection, that her husband be appointed keeper. Sir Francis evidently thought the suggestion a good one, for twenty acres of land were immediately purchased, and the light-house was erected that year. Capt. Hackett held the position until 1864, when he was superannuated, and his son Andrew was appointed in his stead.

### TONNAGE TAX COLLECTION.

The tonnage tax collected for the last fiscal year is shown by the records of the Navigation Bureau to have been $522,234, compared with $539,028 for the previous year. The number of entries of vessels on which the tax was first paid was 11,500, compared with 12,340 for the previous year.

The decrease in receipts is mainly due to the new measurement law, which has brought our tonnage system into accord with that of the maritime world. British vessels paid $344,637 of the tax and American vessels $69,316; steam vessels paid $362,124 and sail vessels $160,100. Receipts at New York were $187,051; Boston, $48,881; Philadelphia, $47,522; New Orleans, $38,929; San Francisco, $38,158. The tax maintains the marine hospitals.

THE MARINE RECORD is the headquarters for marine publications of every description. No. 144 Superior St., Cleveland.

### APPARATUS FOR RAISING SUNKEN SHIPS.

(ILLUSTRATED.)

Among the methods usually adopted to carry out the operation of raising sunken ships, two may be taken as the typical methods that have been successfully employed. The one method is the raising of the vessel by means of camels, or vessels at the surface of the water and ropes or hawsers passing round or attached to the sunken ship, and made fast to the camels or vessels on the surface of the water; and the other method is the building of a coffer-dam from the vessel to above the surface of the water, and pumping the water from the space enclosed thereby. It has long been known that the disadvantages attaching to the first method, among others, are—the danger of the camels capsizing if allowed to sink too deep in the water; the great length of hawsers required for attaching in deep water; the liability of the hawsers to break by the strain produced by the motion of the water at the surface; and lastly, the inability to raise a large sunken ship to the surface of the water. The second method is only applicable when the sunken ship is in shallow water, and is very costly to carry out.

Mr. W. Syer, of James Place, Old Trafford, Manchester, has an invention consisting of two sinkable and raisable iron submarine vessels, which are perfectly controlable, and which are adapted to operate under two strong steel girders placed transversely across the deck of a sunken ship, to which they are attached in a most simple and efficient manner.

These submarine vessels are constructed somewhat in the form of a canal boat, with an air-tight deck, and having air-tight bulkheads across the middle, extending from under the deck to the keelson, thus leaving two vast chambers, one in the fore and the other in the after part, either of which can be filled with water, or emptied independently of the other.

On the deck of the submarine vessel, fore and aft, are constructed two permanent air cases or air-receptacles, of such dimensions as not to prevent the vessel from sinking when its chambers are filled with water, although they are of sufficient dimensions to retain its deck uppermost when submerged, thus rendering the submarine vessel non-capsizable and exceedingly buoyant when resting at the bottom of the water.

When the submarine vessels are required to be raised, the water is driven out of the chambers by the application of air, which is forced down a pneumatic hose in a similar manner as is done in the case of a diver.

By regulating the admission or escape of air through the pneumatic hose, the ends of the submarine vessels can be raised or lowered to any convenient angle with the greatest nicety, and they are, we are informed, capable of being moved to any required position by means of their great buoyancy.

The construction of the submarine vessel is on such lines as to render it perfectly navigable when floating on the surface of the water; it can be operated in any depth of water where divers can work, and can be constructed of such dimensions as to be capable of raising ships of very large tonnage.

### LITERARY NOTICES.

Another issue of the Fall River Line Journal, issued by the management of the well-known Sound steamers of this line, has just made its appearance. It is full of the usual well-selected fun and information for travelers.

The Milwaukee Journal began publishing a serial story of mystery on Saturday and will give $100 in cash prizes to its women readers who make the best guesses as to the outcome of the story. The story runs for over 30 days—beginning Saturday, August 3.

Harper & Bros. announce for publication some time in August the following books: About Paris, by Richard Harding Davis; The Money We Need, by Henry Loomis Nelson; The Front Yard, and Other Italian Stories, by Constance Fenimore Woolson, a new addition of Thomas Hardy's Two On a Tower.

A new magazine that comes to hand is "Information," a sort of current encyclopedia which takes up weekly about sixty subjects in biography, mechanics and passing events, giving concise and yet comprehensive information. It is published by the Transatlantic Publishing Co., in New York and London, the former address being No. 63 Fifth avenue.

# THE MARINE RECORD

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CLEVELAND, O., AUGUST 15, 1895.


THE pioneer steel canal fleet reached Buffalo safely, after as good a run as could be expected, with fine weather. Their trip through the canal will, of course, be rather tedious, but the management seems to have every reason to be satisfied with their venture. The next steamer to be built will have more power, and the barges will carry some sail.

MANY people, it is said, seem to consider the moral code as intended for everybody but themselves. There are a few masters who lie open to similar charges. The navigation laws are compiled on the basis that each regulation shall always be observed as a matter of habit, and faithful observance of such requirements should be considered one of the best evidences of good seamanship, on fresh as well as salt water.

THE executive officers of the Lake Carriers' Association are on the point of preparing a list of the more important aids to navigation, which are all the more needed in these days of low water. It seems to be the desire of the board of managers to press their claims upon Congress very soon after it assembles in December, and to do steady work from that time until the latter part of January. Their idea in this is to do as much as possible while Mr. William Livingstone remains in the president's chair, as his wide acquaintance and high standing in the estimation of important figures in both legislative bodies is an amount of influence which the managers of the association feel that they can ill afford to lose. Some of the more prominent members aver that Mr. Livingstone was placed in the executive chair a year too soon, and they seem more than ever disposed to rebel against the tacit understanding which limits the presidency to one term.

IT is refreshing to note that a United States Court has inaugurated a departure from the old established rule of dividing equally the damages in marine collision cases, when both boats were found to be at fault. In nearly every collision case the master of one vessel is found almost wholly to blame, the other being censured for only clinging closely to what he believed to be his rights in time of imminent danger, and forgetting that general rule which provides that masters shall, in cases of imminent collision, do each what he can to keep clear, regardless of rules already prescribed. For instance, a schooner has been known to be assessed half the damages in a collision case against a steamer, where the only fault found with the sailing vessel by the court was that she had exercised her well defined right to remain on her course, when it was possible (although by no means proven) that she might have avoided collision by getting out of the steamer's way. When the balance of fault has been shown to be so clearly against one boat, it is usually a source of great astonishment to the uninitiated master or owner of the libelant craft to find himself assessed half the damages, and he innocently wonders if the court has gone daft. Surely this sort of finding is as far from equity as it is from common sense, and it is to be hoped that the lead given in the case of the Victory vs. the Plymothian, U. S. Circuit Court of Appeals, fourth circuit, will find a ready following.

THE comparison between the Scotch and tubulous types of boiler which will be made on the new steamships Victory and Zenith City, will be the event of the autumn. It will be watched with interest by all owners of the larger class of tonnage, who will undoubtedly carefully preserve all the data secured by the tests, and not content with that, will wait to see what results the great tester, time, will bring out. The matter of speed, fuel consumption, number of firemen employed, and difference in carrying capacity of the two boats, as indicated by the difference in weight of the respective boilers of the two boats under actual working conditions, are the most important points to be evolved.

### THE FREIGHT SITUATION.

The week in freight circles has been marked by an advance to 35c in the Lake Superior coal rate, and an advance on grain, from Chicago to Buffalo, to 2⅝c on wheat and 2½c on corn. The Duluth rate has also advanced, and is now 2½c to Buffalo. The September rate is 3c, and probably half a million bushels have been placed at that figure. One or two shippers are refusing this rate in anticipation of something better within two weeks. The Duluth-Kingston rate for current shipment is 3¾c. Duluth lumber freights are $1.75 to $1.87½ to Lake Erie, and $1.87½ to $2.00 to Chicago.

These advances have had the effect of taking some of the boats out of the ore trade to the extent that they are loading ore and lumber for Chicago, and then taking grain to Buffalo, loading coal back to Lake Superior, which, of course, consumes much more time than returning light from Chicago. Coal receipts at the head of Lake Superior up to last Saturday have been 8,076,523 tons, or 50 per cent more than had gone up a year ago. This increase is in bituminous coal, for anthracite shipments have fallen off.

Following was the visible supply of grain at Chicago August 10: Wheat, 37,839,000 bushels; corn, 4,613,000; oats, 3,925,000; rye, 254,000; barley, 44,000. Following is a statement showing the stock of grain in store in public elevators at Duluth for the week ended Saturday, August 10, 1895:

| | Bushels. |
|---|---|
| No. 1 Hard wheat | 3,963,567 |
| No. 1 Northern wheat | 1,245 586 |
| No. 2 Nor hern wheat | 293 847 |
| No. 3 spring wheat | 72 113 |
| No. grade spring wheat | None |
| Rejected and Condemned wheat | 39,845 |
| Special bin wheat | 196,934 |
| Aggregate | 5,811 802 |
| Wheat in store at Minneapolis | 6,964,879 |

The ore companies are paying advances in a number of cases and the miners are returning to work as individuals, the old pay rolls have been destroyed. Shipments of ore will probably reach the normal within a week or so.

### OBITUARY.

J. R. IRWIN.

The lakes have lost a popular and prominent man in the person of Mr. J. R. Irwin, who was manager of the coal and ore docks at Fairport for the past ten years, and who died last Tuesday morning at his home in Painesville, as the result of a stroke of apoplexy received on Sunday. Mr. Irwin, in addition to the dock interests, was manager of the American Transportation Co., which operated the the steamers Harper and Nimick, and for whom the new steamer Tyrone is just being completed. He was president of the Euclid Beach Park Co., a Cleveland summer resort corporation, and was mayor of Painesville. His funeral services were held Wednesday at the family residence, with civic and military honors. His remains were taken Thursday to Freeport, Pa., for burial.

Mr. Irwin, before his assumption of the management at Fairport, was prominently connected with the Baltimore & Ohio Railroad Co. He was known to almost everybody interested in the lake trade, and was liked and admired by all. His place at Fairport, where he had everything at his fingers' ends, will be hard to fill.

### THE BANNER CARGO.

The steamship Victory, the largest vessel on the Great Lakes, left Two Harbors at 4 o'clock Saturday morning, with 3,689 gross, or 4,132 net tons of iron ore, on a mean draft of 14 feet 3 inches. She arrived in Cleveland before 6 o'clock, and was unloaded at the Nypano dock in 12 hours, after which she left for Ashtabula to take on a load of coal. This is by far the largest cargo ever brought through the Sault canal.

## SHIP BUILDING AND REPAIRS.

### ANOTHER STEEL SCHOONER.

The Chicago Ship Building Co. announced last Friday that it had received an order from a Cleveland syndicate for a steel schooner similar in size and design to those which had just been ordered by the Minnesota Steamship Co.—365 feet long over all, with 352 feet keel, 44 feet breadth, and 26 feet depth of hold. It was at first reported that she was for Mr. Harvey H. Brown, and that she was to tow behind the steamer Castalia, which caused some wonderment in Cleveland vessel circles for several reasons. Capt. E. M. Peck, of Detroit, however, came down to Cleveland Tuesday, and it then leaked out that the schooner was really ordered by the Northwest Transportation Co., of which Capt. Peck is president, and in which Mr. Brown is also largely interested. The new boat is to be delivered by May 1, 1896, and will tow behind the steamer S. R. Kirby. She will be finished with all modern equipment, with abundance of steam generating capacity.

### ZENITH CITY LAUNCHED.

The steamship Zenith City was launched Wednesday afternoon at the Chicago Ship Building Co.'s yard, in the presence of a large crowd of spectators. She struck a dock across the slip with her port bow, producing a slight dent which can easily be repaired. A large number of people, from Duluth were present, headed by Capt. A. B. Wolvin, managing owner of the new boat.

### WORK AT THE SHIPYARDS.

The past has been a rather quiet week at the shipyards, which are still badly delayed by the non-arrival of material. At the Cleveland Ship Building Co.'s yard the steamer Yale is having her machinery fitted in, and her houses finished. It is the intention to have her in commission, if possible, by September 1, but there is a big fortnight's work on her yet. The Wilson line steamer is assuming shape rapidly. Two-thirds of her keel has been laid, and nearly half her floors, the component parts of which had been riveted together, have been put in. This preliminary riveting work has enabled the men to make a big showing during the past week.

Almost the only outside work in the Globe yard is the rigging of the schooner Tyrone, which will be the handsomest steel schooner on the lakes. Preliminary work on the revenue steamer John G. Carlisle is about finished, and the placing of the orders for material will soon be done. Steel for the largest ship on the lakes, which this company is to build, is very slow coming in.

The new work at other shipyards on the lakes is in much the same shape as reported last week. At Wheeler's shipyard, West Bay City, the steamer Penobscot will be delivered to her owners Saturday.

### COLLINGWOOD YARDS.

Cutler & Savidge's tug Ann Long (Br.) will be rebuilt next winter, Capt. John Simpson doing the work.

The barge Lillie Smith (Br.) is getting some bottom repairs this week.

The Collingwood Dry-dock & Shipbuilding Co. are on the lookout for contracts for the ensuing winter. Already they have been awarded an extensive one by the G. N. Transit Co. This company intend to have their steamer Pacific thoroughly overhauled and improved. The steamer will enter the dock immediately after the last trip. It is expected that the changes will give employment to a large number of men for some months. The company have also a number of other contracts in sight, particulars of which will be given out at a later day.

Efforts are being made to raise the steamer Butcher Boy, which struck a rock and sank near the Indian village on Christian Island a few years ago. H. N. Truesdell purchased the wreck recently, and if raised she will probably be rebuilt in Collingwood.

### REPAIR WORK.

The work at the Ship Owners' dry-dock this week has been confined to stopping leaks on the schooners Tasmania and Three Brothers, and at the Cleveland dry-dock to repairing stern-bearings for the Joe Milton (Br.) and the Ashtabula tugs Wiiliam D. and Kunkle Bros.

The Standard Contracting Co. has found it impossible to rebuild the J. R. Worswick, and a new hull will be built next winter into which the Worswick's machinery will be put. The Castalia struck an obstruction at the Sault and needs some repairs, which will not be made until the close of the season.

BUFFALO.—The Owego has left dry-dock at Buffalo, repairs to her damage caused by striking Racine Reef being almost $20,000. The S. F. Hodge is getting 40 feet of new keel, new fore-foot, repairs to her stern-bearings, and a new stack. Her machinery will also be repaired, the whole costing about $900. Other work lately done has been two new pieces of garboard put into the steamer Walter Vail, besides a new wheel and some calking; six plates were taken off the E. P. Wilbur, four being replaced wilh new ones; and the C. P. Minch received new jibboom, stem, bowsprit, knightheads, rail and stanchions; the light-house tender Haze is getting new foremast and stern bearings.

CHICAGO.—The steamer Alva has been floated, two weeks after her collision, in the Sault, and will come to Chicago to unload and be repaired. The W. & M. barge which punched a hole in herself when launched at West Bay City, has been pumped out, and will come here for repairs. The repair bill of the steamer Arthur Orr was only between $600 and $700, while it has been reported at as many thousands. At Miller Bros.' shipyard, the steamer Allegheny received a new wheel and repairs to her stern-bearings. The steamer Progress had some bottom planking put in and her stern repaired. The tug Monitor had her stern-bearings lined up.

DULUTH.—The repairs to the steamer Nyanza will require about three weeks yet. It was found necessary to cut the planking down from the rail to the turn of the bilge, and remove the planking for about 50 feet on either side of the damaged section, together with nine frames and the steel trusses, and about 100 feet of deck. Repairs are being made with white oak plank from Kentucky. The ship will be entirely recalked, and will receive new steel stringers. Barge 117, which collided with the Alva in the Sault, arrived Tuesday night and is receiving repairs at the American Steel Barge Co.'s yards.

MARINE CITY.—The Point Abino, which had her cabins scorched at Cleveland, has been getting them repaired here.

DETROIT.—Wreckers will make an examination this week of the wreck of the steamer Britannic, which was sunk at 5 o'clock last Friday afternoon by collision with the steamer Russia. The Britannic was ore-laden and was struck amidships, and was cut more than half in two. She was abandoned to the underwriters, who hold risks as follows, and who have asked for bids from wreckers: Western Assurance, $15,000; British American, Greenwich and Union Marine, $10,000 each; Detroit, St. Paul, Security and Marine, $5,000 each. The Russia was found to have 27 of her frames broken or bent, and an equal number of plates will have to come off. She was patched up at Detroit and proceeded for Green Bay.

The Iron Age and John Oades had their wheels tightened in the Detroit dry-dock. The Louis Pahlow is getting her machinery repaired at the dry-dock engine works.

PORT HURON.—The Mineral Rock has been getting some necessary repairs at the Wolverine dry-dock. The schooner C. N. Johnson, which has been lying scuttled at the Owen salt block, at Marine City, was raised last week and brought here, and is being overhauled at the Wolverine.

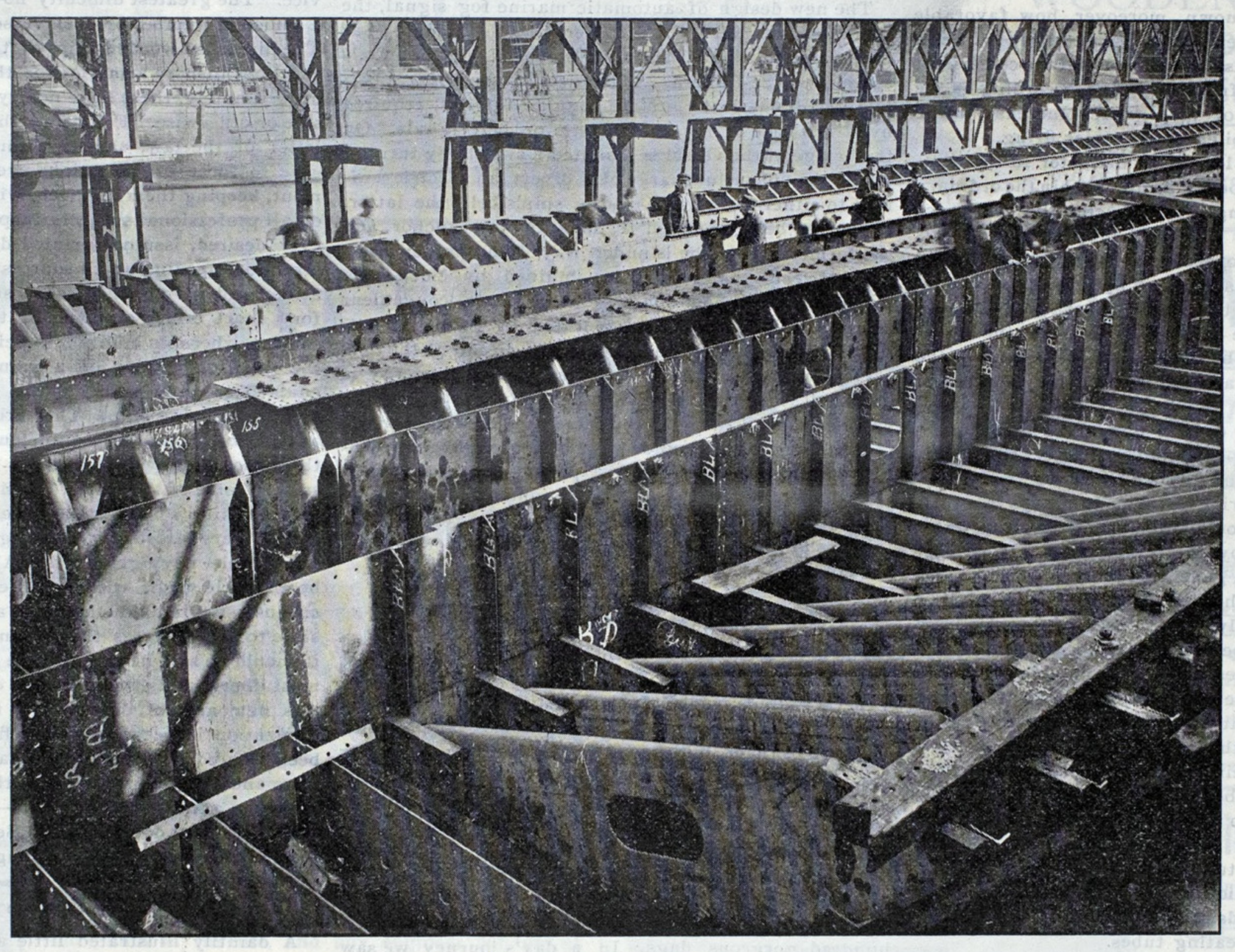
STURGEON BAY.—Leathem & Smith have been fitting out the A. J. Wright with a new rudder. This firm has bid in the wrecked steamer Hurd, which sank the Cayuga, at U. S. marshal's sale, at Harbor Springs, for $750 and will tow her here and rebuild her.

## CHANNEL IRON SYSTEM OF CONSTRUCTION.

(ILLUSTRATED.)

The channel iron system of construction is excellently shown in the accompanying illustration, which pictures the methods employed in the building of the large new steel steamer which the Cleveland Ship Building Co. is putting up for the Wilson Transit Co. There has been a good deal of controversy, pro and con, upon the merits of this system, as compared with the old style of using angle irons on steel plates. The channel system is the invention of Mr. Sinclair Stuart, of the United States Standard Register of Shipping, and has been used in the yards of the Cleveland Ship Building Co., the Chicago Ship Building Co., and F. W. Wheeler & Co., in building the Yale, Penobscot, Malta, Marcia, Aurania, Kearsarge, Zenith City and Victory. The channel system certainly saves a large amount of riveting, and its advocates claim that it gives the ship a greater rigidity where it is most needed, and where rivet heads shear off most. This matter of extra strength, however, is disputed by some builders.

The saving in rivets is effected by riveting the flanges of the channeled iron together direct, instead of using angle pieces. The illustration shows the turn of the bilge in the foreground, no frames being yet set up. The frames will attach where the temporary wooden stringer is seen.



CHANNEL SYSTEM OF CONSTRUCTION.
(Showing keel, keelsons, intercostals and floors.)

HYDROGRAPHIC CHARTS

Of Lakes Erie, Ontario, Superior, Huron, and St. Mary's, St. Clair and Detroit Rivers, for sale at the office of the MARINE RECORD, No. 144 Superior street, Cleveland. Prices 75 and 50 cents each.

## DOMINION NOTES.

A $20,000 dock will be built at North Bay this summer.

The new dry-dock at Owen Sound will be 430 feet in length.

The total expenditure on Canadian canals for the year ending June 30 was $3,690,647.

The new steamer of the Ottawa River Navigation Co. is known as the Duchess of York. She is 160 feet long by 41 feet beam on the main deck.

The schooner Eagle Wing, formerly of Port Huron, now of Sarnia, was sold at Chatham, Ont., this week for $31.75, subject to all claims against her, which amount to $500.

The Port Stanley, Ont., council have asked the Dominion parliament to grant the Lake Erie & Detroit River Railway a bonus of $3,200 per mile to extend their railroad from Ridgetown to connect with the London & Port Stanley.

People down on the docks, about 8:30 Saturday evening, witnessed quite a tangle in the river. The steamer Dominion and barge were lying at the Grand Trunk dock and swung out into the stream to go on up. As they did so a whaleback with two cigar boats in tow came up stream, and the Dominion had consequently to stop her machinery to prevent crowding the whalebacks over upon the Middle Ground. Back of the three cigar boats came the Alberta on her regular up trip, and she, too, had to slow down, to avoid punching a hole into the towbarge attached to the Dominion. In the midst of this tangle the ferry boat Beard started out from the dock on this side and crossed the bows of the Dominion, narrowly escaping running down the marine reporter, whose boat was hidden behind the Dominion; only a swift turn of the Beard's rudder saved him. The Conger, too, was at the same time busy crossing the bows of the Alberta, and altogether the river was about as full of boats as was comfortable.—Sarnia Post.

THE North German Lloyd Co. are doing some building this year. The report is that they will build two vessels for the transatlantic trade, and four for their China fleet.

THE International Navigation Co. announce that Capt. J. C. Jamieson, of the steamship New York, has been appointed commander of the steamship St. Paul, which, it is expected, will be ready for service next month.

## WORK ON LIFE-BOATS.

Gen. Supt. S. I. Kimball, of the U. S. Life-Saving Service, is in Michigan on a trip of inspection to three different establishments in that state where life-boats are being built for the government. The Wyandotte Boat Co. has already delivered two and is constructing four more 26-foot boats of the Monomory pattern, costing $261 each. At Port Huron the Wolverine Dry-Dock Co. is building twelve 34-footers of Honduras mahogany, self-bailing, self-righting water ballast and centerboard, which cost $1,800 each. At St. Joseph the Truscott Boat Manufacturing Co. is building twelve Beebe surf-boats, of white cedar, 27 feet long, and costing $200 each. The aggregate cost of the work reaches $26,166.

# IN THE ENGINE ROOM.

## WATER-TUBE BOILERS.

(Extracts from a paper read by M. J. A. Normand, at the thirty-sixth session of the Institution of Naval Architects, Paris, June 13, 1895.)

The intensity of firing in water-tube boilers is limited by the formation of "steam chambers" or stationary steam, in the heating tubes, and by the strains due to the expansion of these tubes.

The temperature of a heating surface, behind which only steam exists, rises to such an extent that it rapidly becomes oxydized, externally by the hot gases, which are always mixed with oxygen, and internally by the steam. Moreover, the strength of the metal when thus over-heated is reduced so as to render rupture probable.

The formation of those "steam chambers" may be prevented by the following means:

(*a*) The direction of the tubes, especially in their lower and more heated part, must be as vertical as possible.

(*b*) The circulation must be very active. This is nearly self-evident. The greater the circulation the cooler are the tubes. It is well known, moreover, how favorable is the agitation of water to the transmission of heat. Laboratory experiments have shown that the co-efficient of transmission varies from one to five, according as the motion of water is *nil* or very great. Increase in the economic duty of the boiler means easier firing.

(*c*) The proportion of length to diameter in the heating tubes ought not to be too large. Within the ordinary limits of the ratio of length to diameter the resistance to the motion of water is nearly proportional to this ratio. The circulation of water, so essential to the good working of a boiler, is reduced as the resistance increases. Moreover, all the steam generated in the inferior part of the tube must pass through the upper end. The longer the tube the smaller the density of the fluid in the upper part, and the greater the chances of its being burnt.

(*d*) The section of the outside down-take or water-return tubes, from the upper to the lower reservoirs, ought to be of large proportions. When the boiler is at work, the pressure in the inferior reservoir is always less than in the upper one. Should it be otherwise, the water would not flow down by the return tubes. It is most probable that the steam generated in the heating tubes (or the air mixed with the feed) produces the circulating of water by impulse only. This force of impulse is so great that when the tube is vertical the ascending motion of the fluid may be estimated by applying the theory of communicating vessels, according to the difference between the mean density of the heterogeneous fluid in the heating tube and that of the water in the return tubes, due allowance being made, of course, for friction.

When the heating tube is more or less inclined, the adherence of bubbles to the inside surface is such that this mode of reckoning would certainly give a much higher speed than is actually the case, the error being greater as the inclination of the tube approaches the horizontal. This affords another proof of the importance of verticality in heating tubes.

Should the soundness of these views be questioned, one thing, however, is indisputable—the rise of water and steam in the heating tubes produces a difference of pressure between the upper and lower reservoirs, and this difference reduces the intensity of the circulation from which it is a consequence.

Accordingly, it is most important to lessen this difference in giving to the return tubes the greatest possible section.

The second cause which limits the intensity of firing is the strains due to the expansion of the heating tubes. Several well-known arrangements prevent these strains. For instance, that of the Belleville boilers, the use of Field tubes, as in the Collett-Niclausse boilers, and especially the adoption of heating tubes sufficiently long and sufficiently curved (both conditions are necessary) for preventing oblique strains on the junction with the tube plates.

It is also most important that no joints or riveting should be allowed in the actual vicinity of the furnace.

Most of the principles laid down in this paper may appear to be so simple as to render their statement useless. It is not so if we consider how very few of the different types of water-tube boilers are designed in accordance with all of them.

However, my object is not to criticise any of these types, when not intended for intense firing, although the best boilers for intense firing are also generally the best for slow work. Many water-tube boilers are now making steam with tubes nearly horizontal, very low fire-boxes, great section of passage and short length of travel. Each can boast of particnlar advantages which cannot be disputed.

But the conditions imposed for boilers become more and more severe. In order to save weights, the combustion of fuel per square foot of grate increases every day; 20 pounds is no longer sufficient; twice, perhaps three times as much will soon be expected for the most powerful engines. A good design will give the owner, the engineer, or the navy that adopts it a great advantage. It is worth while to examine how it will be possible to meet impending exigencies.

* Copper would last much longer than steel, but it is very dangerous, as, in case of bursting, the tube opens out fully, allowing the hot water and steam to escape through double the section of the tube. Ordinary brass becomes brittle and weak when overheated. With mild steel the section of the orifice is generally small. Security against personal injuries surpasses at all other considerations in importance.

## NEW AUTOMATIC FOG SIGNAL.

The new design of automatic marine fog signal, the invention of Mr. F. H. Berry, of London, has been fitted to the British India Steam Navigation Co.'s steamship, the Dunera. The object of the apparatus is to give automatically, at the regular interval required by law in case of fog, the whistle or bell signals. On the bridge of the vessel is mounted a switch, by turning which the officer in charge can divert an electric current to either the whistle or the ship's bell, the latter, of course, being sounded if the ship is at anchor, and the former when she is under way. The proper interval between the sounds is obtained by clock-work placed in the chart-house or some other convenient position. The current is generated by means of batteries, the clock-work completing the circuit at the necessary intervals, and in this way electrical energy is obtained for either striking the bell or opening the valve of the whistle. At the same time that the whistle is blown or the bell sounded a pen is brought into contact with a continuous band of paper, which is marked with divisions. As the paper is wound off at a uniform speed by the clock-work an autographic record is obtained showing when the fog signals, by bell or whistle, are sounded.

## SAILS ON CHINESE CRAFT.

The hack-artist of the world at large treats their sails—the most picturesque bits of China—as if they were Venetian blinds, made of big bamboo slats backed by canvas. That is not at all how they look. The bamboo slats are in them, but they are very small, and are only seen when near at hand. Otherwise I do not think it would be easy to say anything of them that is not true—they are so dissimilar and varied and peculiar. One towers like a great white steeple or a cloud above houses, trees and everything. The next may be made of a woman's apron or a little mat. One is composed of a single blue shirt, and the next is a crazy quilt of a hundred gorgeous flags. In a day's journey we saw white ones, red ones, black ones, and others that were splotched, patched, tattered or rent. We saw sails made of matting, made of old coats, made of trousers and of banners. We saw sails with prayers painted upon them, others with mottoes, others with pictures, and what may be called heraldic devices. Most of them were mere parallelograms of cotton, but some were like schooner sails at home, and some were lateen-shaped. There is no rule as to the number of sails a boat may carry, and one often sees five spread on the larger junks, upon three regular masts and two smaller ones fastened to the vessel's sides, one forward and one aft.

A great part of the din that beats upon the air of China comes of the raising and lowering of these masts and sails, for on all except the sea-going craft the masts are hinged, and are forever being pulled up or let down. To do this work the Chinese crews are bunched together on each deck, where they shout with every output of strength.—From "Every-day Scenes in China," by Julian Ralph, in Harper's Magazine for August.

## HYDROGRAPHIC CHARTS

Of Lake Superior, Lake Huron, Lake Erie, Lake Ontario, Georgian Bay and Detroit River, for sale at the office of THE MARINE RECORD, 144 Superior street, Cleveland, O. Price, 50 and 75 cents each.

## NAVAL MILITIA ORGANIZATIONS.

The naval militia organizations, as bred and created largely in a yachting atmosphere and now existing in 13 states, with a present complement of 226 officers and 2,706 men, are the first auxiliaries to be considered. The existing naval militia is primarily a state organization, dependent largely upon local and state support, and enrolled as part of the National Guard. It is not a true naval reserve which should owe allegiance only to the general government and be subject solely to the naval regulations governing the general service. While subject, however, to state control, the naval militia is kept in constant touch with the regular establishment by receiving, for arms and equipments, in each state, a portion of the $25,000 annually appropriated for its encouragement by Congress, and distributed by the department under such rules as are deemed wisest and best for the object to be accomplished. Congress has also authorized by law the loan of unused ships and other property to states having organized and equipped naval militia. The ships so loaned are those out of commission and unsuited for regular naval service. The greatest difficulty now encountered is to find a sufficient number of such vessels to meet the demand. The discarded wooden ships of the old navy make most excellent inshore armories for these organizations, but, unfortunately, these have nearly all been disposed of by sale or otherwise. Following the spirit, as well as the letter of the law, the department bas endeavored to give to these organizations every possible encouragement, keeping them in touch with the navy by advice on all professional subjects, inspection by officers whenever desired, issuing printed documents for their instruction, opening up all sources of professional information, and giving them each summer an opportunity for a short cruise on some of the ships in the regular service, where, in addition to being taught somewhat of the manifold duties of a man-of-warsman. they are enabled to practice firing the great guns at a target from the moving ship. They are also allowed to draw at first cost arms and equipments from the portion of the national allowance allotted to their state. As a result, in some of the states, the naval militia is the best armed military body in the state, having rapid fire guns of the very latest pattern, magazine rifles, and good serviceable navy revolvers. All this, however, would be of little avail without intelligent, persistent and enthusiastic individual effort and the support of the state to whose forces they belong. It is but right that it should be said here that some of the states have been most liberal and progressing in encouraging and aiding this new arm of defense. In the states where the organization is best and most efficient these results have been secured by great labor, patience and tact. There were and are sources of opposition calling forth determination and sound judgment.—From an article by the Hon. Wm. McAdoo, Assistant Secretary of the Navy, in North American Review for August.

## TRADE NOTES.

A daintily illustrated little advertising booklet has been issued by the Harrisburg (Pa.) Foundry and Machine Works.

The Davis-Farrar Co., of Erie, Pa., (Humboldt Iron Works) are sending out a neat pamphlet containing illustrations of their pumps and suction dredges.

The American line steamship St. Louis, will, it is said, on the completion of her sister ship, the St. Paul, be taken to the Cramp's shipyard in Philadelphia, where she will be fitted with larger funnels, in order that the ship's full power may be attained.

The Morris Machine Works, successors to Heald, Sisco & Co., and Heald & Morris, Baldwinsville, N. Y., have just issued a circular descriptive of the Heald and Sisco patents in centrifugal pumping machinery. This firm has established a New York office at No. 39 and 41 Cortlandt street, with Hungerford Bros. & Co.

The American Ship Windlass Co. has just received an order for two Manton towing machines from the Philadelphia & Reading Railroad Co, on whose tug Lebanon the machine has been used for six months. The management say that in addition to the saving in hawsers, the energy is so equalized by the use of this machine that they can tow three barges with it cheaper than two without it. The manufacturers have inquiries from the lakes, whereby three or four additional machines will be called for within the next thirty days.

WILLIAM L. BROWN, President.
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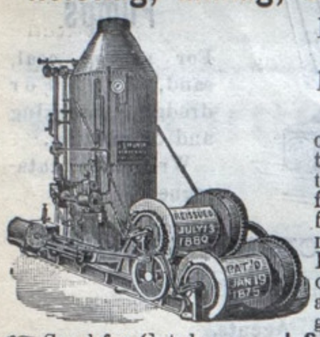

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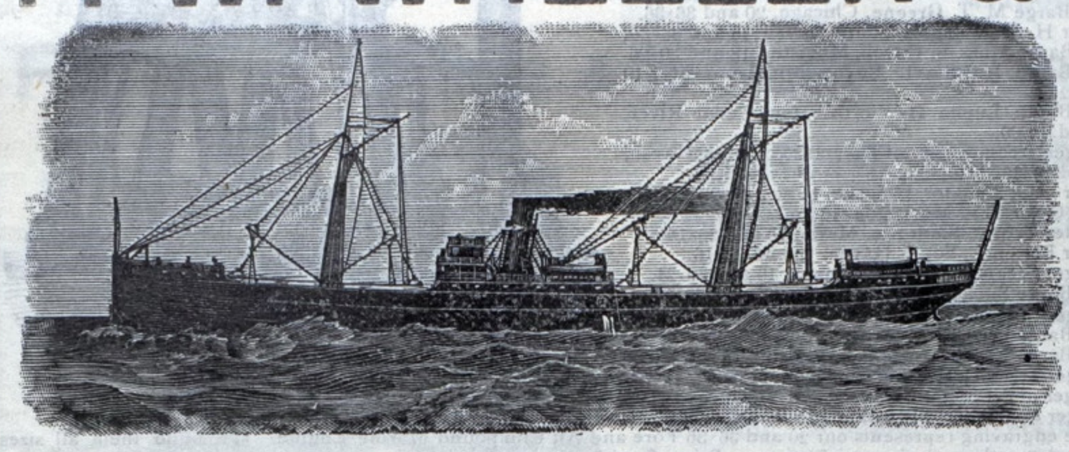

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**CAPITAL, Paid up in Cash, - - $3,000,000.00**
**ASSETS, - - - - - - 9,562,599.92**

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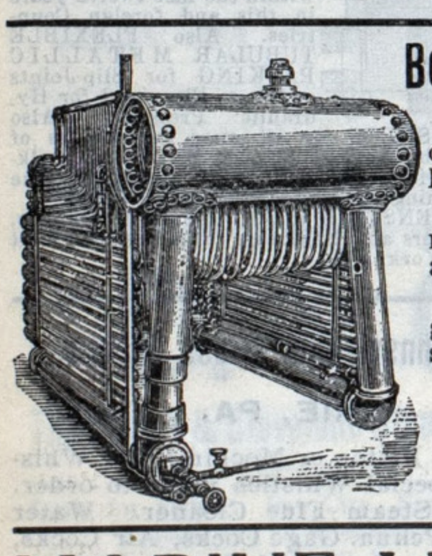

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The Steam Yacht "Rex," having 25 square feet grate surface and 1000 square feet heating surface, steamed 144 miles on 1000 lbs. of coal.

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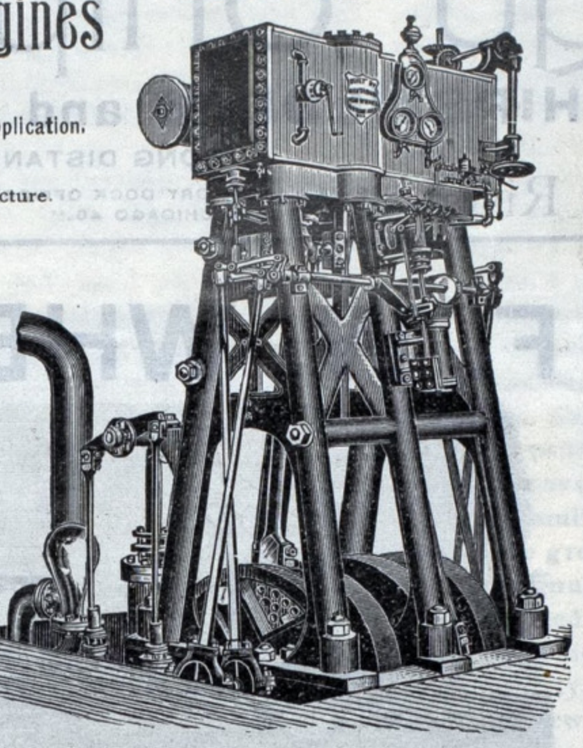

The Engines in the following boats are of our manufacture.

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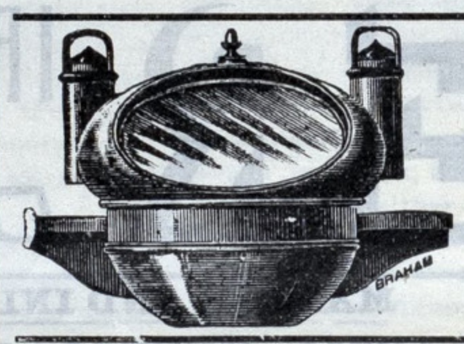


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**TUG MONARCH**—Engine Compound, Cylinder 16 & 30 in. diameter, 30 in. Stroke, Steam Pressure allowed, 125 lbs.

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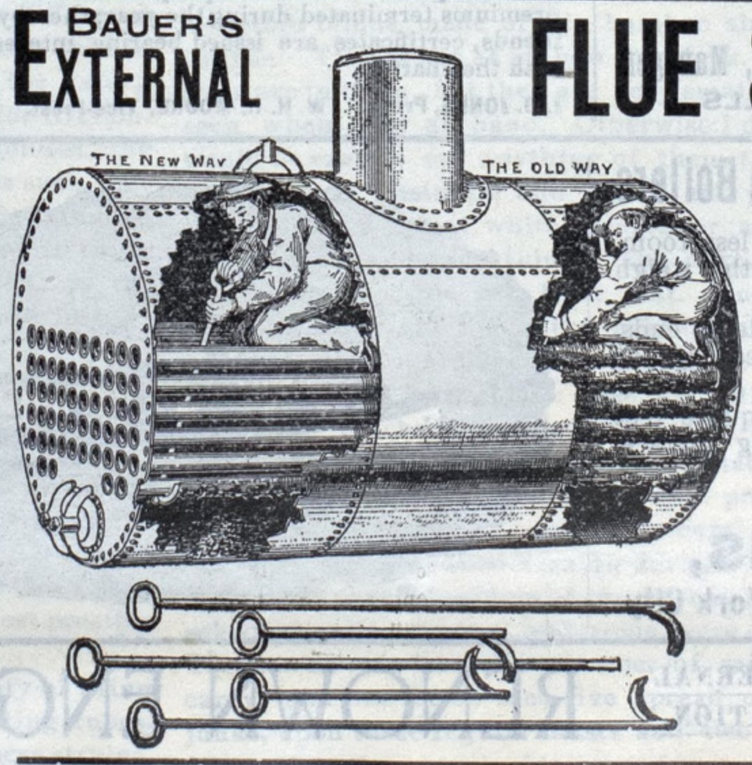


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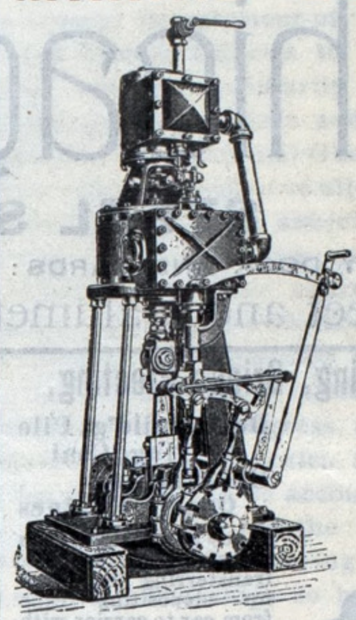

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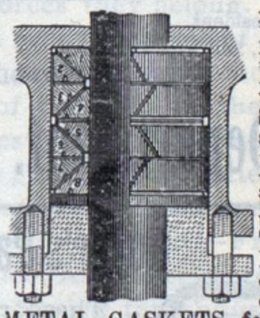

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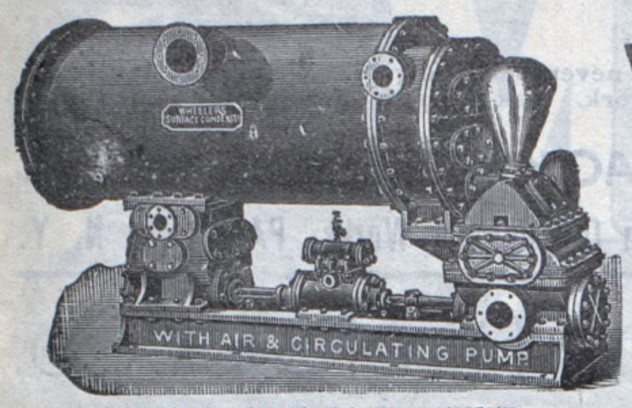


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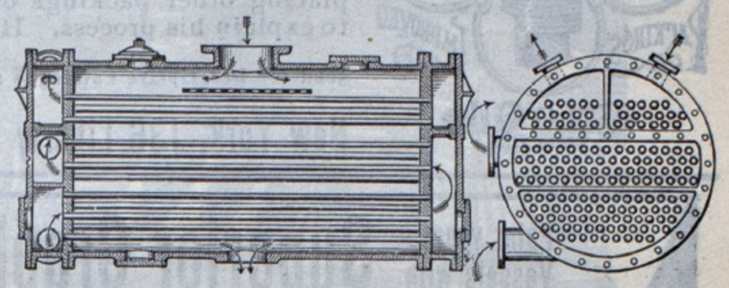

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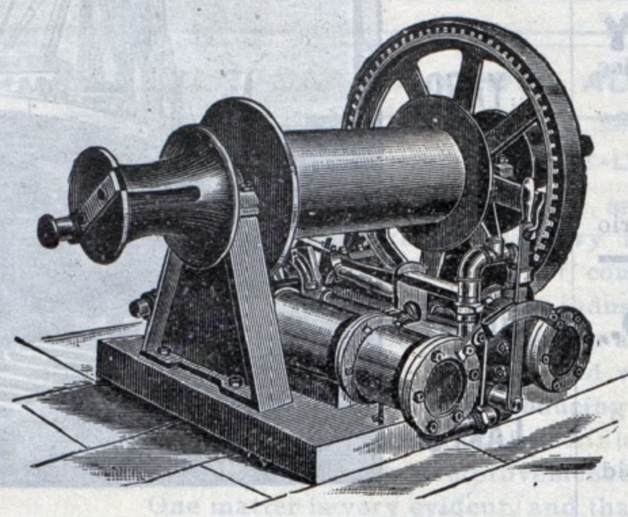

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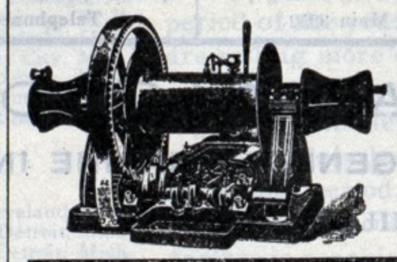

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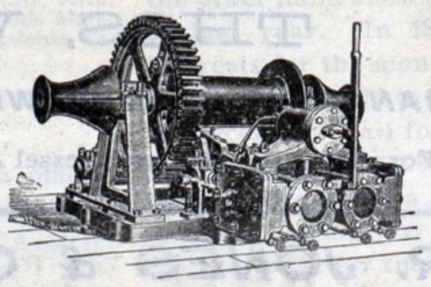

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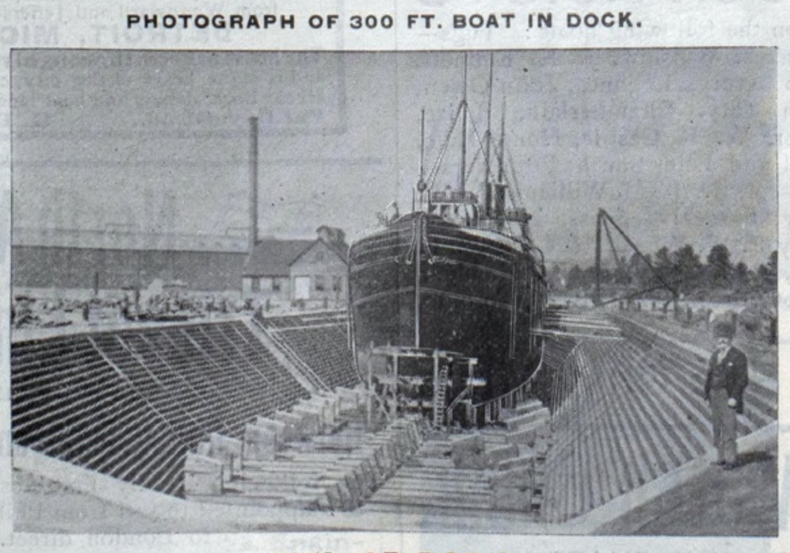

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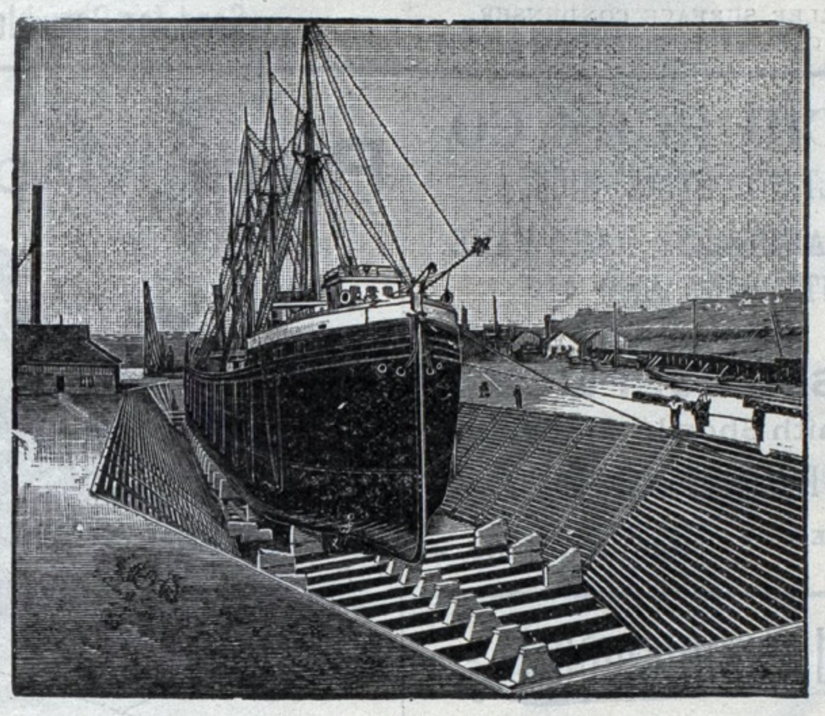

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